Remarks

In view of the above amendments to the claims and the following discussion, the applicants submit that none of the claims now pending in the application are obvious under the provisions of 35 U. S. C. § 103. Thus, the applicants believe that all of these claims are in allowable form.

OBJECTIONS

1. Claim 1

The Examiner objects to claim 1 because of informalities. Applicants have amended claim 1 to replace the term "a" with "the", providing proper antecedent basis. In view of this amendment to claim 1, the basis for the Examiners' objection thereto has been removed. Therefore, it is respectfully requested that this objection be withdrawn.

REJECTIONS

A. 35 U. S. C. § 103

1. Claims 1-13 are not unpatentable over Bu

Claims 1-13 stand rejected under 35 U.S.C. § 103(a) as being obvious over Bu (U.S. Patent Publication 2002/0101172 published August 1, 2002). The applicants submit that these claims are not rendered obvious over this reference.

Claim 1 has been amended in that the compensation means comprise for each column of emitters, one single separate unit for determining a representative value of the drain current supplying the selected emitter of this

column by measuring the total current supplying all of the emitters of this column, and for turning on the emitters already during the programming step.

As shown in figures 1 and 2 and described in the specification at paragraph 0083 of the present application, the determination unit 41 is capable of measuring the total current supplying all of the emitters of a column, including the drain current passing through the modulator 14 during the programming thereof. Therefore, the single separate unit 26 including the determination unit 41 is capable of measuring the total current supplying all of emitters of a column, as defined in the new claim 1. Also, Fig. 2 shows that the single separate unit 26 is arranged in the single current supply line 4 between power supply means Vdd and all of the emitters of a respective column. As described in the specification at paragraph 0083, "The output voltage of the determination unit 41 is proportional to the total current passing along line 4."

This has the advantage that when a single modulator 14 is selected for programming with a new drive current I_{data}, the current provided by power supply means Vdd is continuing to flow to all the other emitters of this column. All of the emitters of the image display device of the present invention are therefore continuously illuminating. This can be provided e.g. by using a resistor 45 connected in series with the single supply line for the emitters and a precision operational amplifier 46, as explained in the specification at paragraph 0081 with regard to figure 2. The single separate unit 26 therefore does not interrupt the current flowing through the single current supply line 4.

In the present invention, and as described by the new claim 1, when the current for a selected modulator 14 is measured by the single separate unit 26 and comparator 28, all remaining emitters of this column are still supplied with current by the power supply means Vdd, because the single separate unit 26 measures the total current supplying all of the emitters of this column, as defined by the new claim 1.

The cited reference Bu, US 2002/0101172, describes an image display device comprising a circuit block 5 with two transistors 53, 54 arranged in the

supply line between an emitter 1 and a supply voltage generator providing supply voltage Vs. Transistor 54 is arranged in the supply line for interrupting the voltage supply to the emitter 1, and transistor 53 is arranged for applying at the same time a driving current I_{OLED} to emitter 1 and a current modulator 21. The circuit block 5 includes further an inverter ahead of transistor 54, so that, when a scan signal is applied to circuit block 5, transistor 53 is switched through and transistor 54 is blocked, to apply only driving current I_{OLED} to emitter 1 during a programming mode.

A current comparator 6 compares driving current I_{OLED} with a reference current I_{REF} in the programming mode and provides a feedback voltage V_{FB} for a data signal at input 4, to compensate the trip-threshold voltage of modulator 21. The emitters of the image display device of Bu provide therefore a uniform light emission of the complete array independently of an individual trip-threshold voltage of each emitter.

The reference Bu discloses therefore, a programming phase, during which a specific drive current I_{OLED} is applied to emitter 1, for providing a correct programming voltage for modulator 21, and an emission phase, during which supply voltage Vs is provided to emitter 1 and modulator 21, for providing a correct light emission of emitter 1. As described with regard to fig. 2, par. 0016, circuit block 5 and comparator 6 is required for each emitter 1, to provide the correct programming voltage for the respective modulator 21. When circuit block 5 would be used for a subsequent emitter of a row, the supply voltage Vs to the previous emitter would be interrupted by transistor 54.

The Examiner argues, that "Bu does not disclose a single separate unit for determining a value of drain current across the pixel OLED", but "it would have been obvious to one skilled in the art at the time of the invention that placing the detection circuit 6 within the active matrix pixel enables the detection circuit to enable constant detection of the emission current...

But when using the circuit block 5 and the current comparator 6 of Bu for determining the current supplied to all of the modulators and emitters within a column, the circuit block 5 has to be arranged between supply voltage Vs and all

of the emitters of this column. Therefore, when a single modulator 21 is selected for adjusting the data signal 4, supply voltage Vs would be interrupted by

transistor 54 for all the remaining emitters of this column. Correspondingly, each time the data signal 4 is adjusted for a selected modulator of this column, supply voltage Vs is interrupted by transistor 54 during the programming mode for all of the emitters of this column.

A display device of this kind would have therefore a very low brightness because the supply voltage Vs for all emitters of a column would be switched off periodically, each time a modulator of this column is programmed. One skilled in the art therefore would not consider using a circuit bloc 5 as described by Bu for an active matrix image display device as defined by the new claim 1.

When using a circuit bloc 5 as defined by Bu for an active matrix image display as defined by the new claim 1, the compensation means would not be able to measure the total current supplying all of the emitters of this column, because the circuit block 5 interrupts the current provided by the power supply generating the supply voltage Vs. Therefore, when using a current comparator 6 and a circuit bloc 5 for an active matrix image display as defined by the new claim 1 as a trip threshold voltage compensation means, one skilled in the art would not arrive at a single separate unit measuring the total current supplying all of the emitters of this column.

In view of the above arguments, Applicants respectfully submit that claim 1 is patentable over Bu and therefore, claims 2-13 are also patentable based on their dependence upon claim 1.

CONCLUSION

Thus, the applicants submit that none of the claims, presently in the application, are obvious under the provisions of 35 U. S. C. § 103. Consequently, the applicants believe that all of the claims are presently in

condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Ms. Patricia A. Verlangieri, at (609) 734-6867, so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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